Amendments to the Claims

This listing of claims will replace all prior versions, and listings of claims in the application.

Listing of Claims:

1. (original): A temperature sensor, comprising:

a comparator circuit having an output node and a variable current node, wherein the output node is a first voltage at a given temperature when a current at the variable current node is less than a threshold current, and a different second voltage at the given temperature when the current at the variable current node is more than the threshold current;

a variable resistance circuit including at least n resistors connected in series between the variable current node of the comparator and a reference voltage, where n is an integer of 4 or more, and wherein the n resistors have different resistance values; and

a switching circuit which selectively bypasses individual ones of the n resistors.

2. (original): The temperature sensor of claim 1, wherein one resistor among the n resistors has a lowest resistance value, and wherein the remaining resistors among the n resistors have resistance values which are multiples of the resistance value of the lowest resistance value.

3. (original): The temperature sensor of claim 1, wherein one resistor R_1 among the n resistors has a lowest resistance value x, and wherein the remaining

resistors R_2, R_3, ... , R_n resistors among the n resistors have resistance values of $x \cdot 2$, $x \cdot 4$, ... , $x \cdot (2^{n-1})$, respectively.

4. (original): The temperature sensor of claim 1, wherein the switching circuit comprises at least n transistors connected across respective ones of the n resistors, wherein gate terminals of the n transistors are responsive to an input test signal to selectively bypass the n resistors, respectively.

5. (original): The temperature sensor of claim 2, wherein the switching circuit comprises at least n transistors connected across respective ones of the n resistors, wherein gate terminals of the n transistors are responsive to an input test signal to selectively bypass the n resistors, respectively.

6. (original): The temperature sensor of claim 3, wherein the switching circuit comprises at least n transistors connected across respective ones of the n resistors, wherein gate terminals of the n transistors are responsive to an input test signal to selectively bypass the n resistors, respectively.

7. (currently amended): A temperature sensor, comprising:

a comparator circuit having an output node and a variable current node, wherein the output node is a first voltage at a given temperature when a current at the variable current node is less than a threshold current, and a different second voltage at the given temperature when the current at the variable current node is more than the threshold current;

first and second variable resistance circuits connected in series between the variable current node of the comparator and a supply voltage, wherein the first variable resistance circuit includes n resistors connected in series, where n is an integer of 4 or more and the n resistors have different resistance values <u>from each</u>

other, and wherein the second variable resistance circuit includes m resistors connected in series, where m is an integer of 4 or more and the m resistors have different resistance values from each other;

a first switching circuit which selectively bypasses individual ones of the n resistors of the first variable resistance circuit; and

a second switching circuit which selectively bypasses individual ones of the m resistors of the second variable resistance circuit.

8. (original): The temperature sensor of claim 7, wherein m equals n, and wherein resistance values of the m transistors of the first variable resistance circuit are respectively the same as resistance values of the n transistors of the second variable resistance circuit.

9. (original): The temperature sensor of claim 8, wherein one resistor among the n resistors has a lowest resistance value, and wherein the remaining resistors among the n resistors have resistance values which are multiples of the resistance value of the lowest resistance value.

10. (original): The temperature sensor of claim 8, wherein one resistor R_1 among the n resistors has a lowest resistance value x, and wherein the remaining resistors R_2, R_3, ... , R_{n-1} resistors among the n resistors have resistance values of $x \cdot 2$, $x \cdot 4$, ... , $x \cdot (2^{n-1})$.

11. (original): The temperature sensor of claim 7, wherein the first switching circuit comprises at least m transistors connected across respective ones of the m resistors, wherein gate terminals of the m transistors are responsive to a first input test signal to selectively bypass the m resistors, respectively, and wherein the second switching circuit comprises at least n transistors connected

across respective ones of the n resistors, wherein gate terminals of the n transistors are responsive to a second input test signal to selectively bypass the n resistors, respectively.

12. (original): The temperature sensor of claim 8, wherein the first switching circuit comprises at least m transistors connected across respective ones of the m resistors, wherein gate terminals of the m transistors are responsive to a first input test signal to selectively bypass the m resistors, respectively, and wherein the second switching circuit comprises at least n transistors connected across respective ones of the n resistors, wherein gate terminals of the n transistors are responsive to a second input test signal to selectively bypass the n resistors, respectively.

13. (original): The temperature sensor of claim 9, wherein the first switching circuit comprises at least m transistors connected across respective ones of the m resistors, wherein gate terminals of the m transistors are responsive to a first input test signal to selectively bypass the m resistors, respectively, and wherein the second switching circuit comprises at least n transistors connected across respective ones of the n resistors, wherein gate terminals of the n transistors are responsive to a second input test signal to selectively bypass the n resistors, respectively.

14. (original): The temperature sensor of claim 10, wherein the first switching circuit comprises at least m transistors connected across respective ones of the m resistors, wherein gate terminals of the m transistors are responsive to a first input test signal to selectively bypass the m resistors, respectively, and wherein the second switching circuit comprises at least n transistors connected across respective ones of the n resistors, wherein gate terminals of the n transistors

are responsive to a second input test signal to selectively bypass the n resistors, respectively.

15. (original): The temperature sensor of claim 11, further comprising a trimming circuit connect in parallel to the first variable resistance circuit, wherein the trimming circuit includes a second set of m transistors connected across the m resistors of the first variable resistance circuit, respectively, and m latch circuits which selectively latch the gates of the second set of m transistors to a high voltage.

16. (original): The temperature sensor of claim 12, further comprising a trimming circuit connect in parallel to the first variable resistance circuit, wherein the trimming circuit includes a second set of m transistors connected across the m resistors of the first variable resistance circuit, respectively, and m latch circuits which selectively latch the gates of the second set of m transistors to a high voltage.

17. (original): The temperature sensor of claim 13, further comprising a trimming circuit connect in parallel to the first variable resistance circuit, wherein the trimming circuit includes a second set of m transistors connected across the m resistors of the first variable resistance circuit, respectively, and m latch circuits which selectively latch the gates of the second set of m transistors to a high voltage.

18. (original): The temperature sensor of claim 14, further comprising a trimming circuit connect in parallel to the first variable resistance circuit, wherein the trimming circuit includes a second set of m transistors connected across the m resistors of the first variable resistance circuit, respectively, and m latch circuits

which selectively latch the gates of the second set of m transistors to a high voltage.

19. (currently amended): The temperature sensor of claim 7, further comprising a third variable resistance circuit connected in series with the first and second variable resistance circuits, wherein the third variable resistance circuit includes p resistors connected in series, where p is an integer of 4 or more and the p resistors have different resistance values from each other, and p fuses respectively connected across the p resistors.

20. (original): The temperature sensor of claim 19, wherein p equals m equals n, and wherein resistance values of the p transistors of the third variable resistance circuit are respectively the same as resistance values of the m transistors of the first variable resistance circuit and the n transistors of the second variable resistance circuit.

21. (original): A temperature sensor, comprising:

a comparator circuit having an output node and a variable current node, wherein the output node is a first voltage at a given temperature when a current at the variable current node is less than a threshold current, and a different second voltage at the given temperature when the current at the variable current node is more than the threshold current;

a variable resistance circuit including a plurality of resistors connected in series; and

a trimming circuit which selectively electrically connects or disconnects individual ones of the resistors of variable resistance circuit to the variable current node.

22. (original): The temperature sensor of claim 21, wherein the trimming circuit includes a plurality of fuses respectively corresponding to the plurality of resistors.

23. (original): The temperature sensor of claim 21, wherein one resistor R_1 among the plurality of resistors has a lowest resistance value x, and wherein the remaining resistors R_2, R_3, ... , R_n resistors among the plurality of resistors have resistance values of $x \cdot 2$, $x \cdot 4$, ... , $x \cdot (2^{n-1})$, respectively.

24 – 33. (cancelled)